WHAT IS CLAIMED IS:

1. A semiconductor device comprising:

a semiconductor substrate having a main plane which has a first region and a second region having the surface which is lower than the surface of the first region such that the first region and the second region are connected to each other;

a first insulating film formed on the first region and containing silicon, nitrogen and oxygen;

a conductive film formed on the first insulating film and containing silicon; and

a second insulating film formed on the second region, containing silicon and oxygen and arranged to be in contact with the conductive film and the first insulating film.

2. A semiconductor device according to claim 1, wherein a portion of the first insulating film which is in contact with the semiconductor substrate contains nitrogen at a concentration higher than the concentration in a residual portion of the first insulating film.

3. A semiconductor device according to claim 2, wherein the concentration of nitrogen in a portion of the first insulating film which is in contact with the semiconductor substrate is 5×10^{13} cm^{-2} or higher.

4. A semiconductor device according to claim 1, wherein the second insulating film further contains

nitrogen, and a portion of the second insulating film which is in contact with the semiconductor substrate and the conductive film has a concentration higher than the concentration in the residual portion of the second insulating film.

5. A semiconductor device according to claim 1, wherein the first insulating film is a silicon oxide film containing nitrogen, and the conductive film is a polycrystalline silicon film containing a dopant.

6. A semiconductor device according to claim 5, wherein the first insulating film is a gate insulating film, and the conductive film is a gate electrode.

7. A semiconductor device according to claim 5, wherein the first insulating film is a tunnel gate insulating film, and the conductive film is a floating gate electrode.

8. A method of manufacturing a semiconductor device comprising the steps of:

forming an insulating film containing silicon and nitrogen on a semiconductor substrate;

forming a film which must be processed and which contains silicon on the insulating film;

processing the film which must be processed to cause a portion of the insulating film to expose to the outside; and

subjecting a semiconductor structure obtained owing to the steps to an oxidation process using an

oxidizing gas containing one of ozone and oxygen radicals.

9. A method of manufacturing a semiconductor device according to claim 8, wherein the insulating film is one of a silicon oxide film containing nitrogen and a silicon nitride film.

10. A method of manufacturing a semiconductor device according to claim 8, wherein the insulating film is a gate insulating film, and the film which must be processed is processed to form a gate electrode.

11. A method of manufacturing a semiconductor device according to claim 8, wherein the insulating film is formed in such a manner that the concentration of nitrogen at an interface of the insulating film with the semiconductor substrate realized before the oxidation process is performed is 5×10^{13} cm^{-2} or higher.

12. A method of manufacturing a semiconductor device comprising the steps of:

forming an insulating film containing silicon and nitrogen on a semiconductor substrate;

forming a film which must be processed and which contains silicon on the insulating film;

processing the film which must be processed such that a portion of the insulating film is exposed to the outside;

subjecting a semiconductor structure obtained in

the steps to an oxidation process by using oxidizing gas containing one of ozone and oxygen radicals; and

subjecting the semiconductor structure subjected to the oxidizing process to at least one of a nitriding process and an additional oxidation process.

13. A method of manufacturing a semiconductor device according to claim 12, wherein the insulating film is one of a silicon oxide film containing nitrogen and silicon nitride film.

14. A method of manufacturing a semiconductor device according to claim 12, wherein the insulating film is a gate insulating film, and the film which must be processed is processed to form a gate electrode.

15. A method of manufacturing a semiconductor device according to claim 12, wherein the insulating film is formed in such a manner that the concentration of nitrogen at an interface of the insulating film with the semiconductor substrate realized before the oxidation process is performed is not less than 5×10^{13} cm^{-2}.

16. A method of manufacturing a semiconductor device comprising the steps of:

forming an insulating film containing a silicon nitride film on a film which must be processed and which includes a silicon film;

processing the insulating film by using lithography and etching to form a pattern composed of

the insulating film;

subjecting the pattern in an atmosphere containing one of oxygen radicals and ozone to convert the exposed surface of the silicon nitride film into a silicon oxide film;

fining the pattern by removing the silicon oxide film; and

processing the film which must be processed by transferring the fined pattern to the film which must be processed.

17. A method of manufacturing a semiconductor device according to claim 16, wherein

the insulating film is etched in such a manner that the surface of the film which must be processed is not exposed to the outside to convert the exposed surface of the silicon nitride film into a silicon oxide film, and then silicon oxide film is removed to form the pattern,

a portion of the insulating film constituting the first pattern which has a small thickness is removed to form the fine pattern, and

the fine pattern is used as a mask to etch the film which must be etched to transfer the pattern to the film which must be processed.

18. A method of manufacturing a semiconductor device according to claim 16, wherein the insulating film further contains a silicon oxide film, and

the silicon oxide film is formed below the silicon nitride film.

19. A method of manufacturing a semiconductor device according to claim 16, wherein the film which must be processed is formed into a gate electrode.